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Tree Frog Site| A protohistoric large game procurement and processing site in the Centennial Valley, Montana

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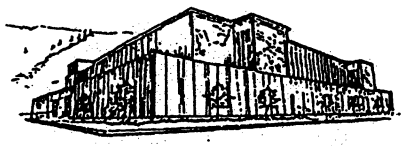

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THE TREE FROG SITE: A PROTOHISTORIC LARGE GAME PROCUREMENT AND PROCESSING SITE IN THE CENTENNIAL VALLEY, MONTANA

by

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The Tree Frog Site: A Protohistoric Large Game Procurement and Processing Site

Chairman: Thomas A. Foor

Archaeologists use faunal analysis to give us a better understanding of the relationship between humans and their environment, especially between humans and other animals. The analysis of animal bones has also provided information regarding nutrition, resource use, and economies (Reitz and Wing 1999). It is clear that archaeologists can better examine the past by employing faunal analysis in the interpretation of archaeological sites. In doing so, archaeologists can better examine the life ways of the past. Animal remains in archaeological assemblages are the result of human behaviors with environmental resources, and the cultural perceptions of those resources (Reitz and Wing 1999).

The faunal analysis of material recovered from excavations at the Tree Frog site in 1997 and 1998 will provide information toward the interpretation of Protohistoric sites on the Northern Great Plains. Likewise, the analysis will provide information as to changing Shoshone subsistence pattern, and their movement onto the Great Plains upon the acquisition of the horse.

Faunal remains recovered from the Tree Frog site were carefully analyzed in order to determine a variety of factors. These factors include age at time of death, taxon, element, weight, and various taphonomic processes. The results of the analysis indicate that Tree Frog was occupied in the late summer or early autumn, and that the group occupying the site was in possession of domestic horses, and European trade goods.

This study can be used to assist in the interpretation of transitional Protohistoric Shoshone sites, while also providing insight as the cultural activities of the past. It demonstrates the complexity of the Protohistoric period, and changing economies as the horse was adopted.

Acknowledgements

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CHAPTER I—INTRODUCTION

Archaeologists use faunal analysis to give us a better understanding of the relationship between humans and their environment, especially between humans and other animals. The analysis of animal bones has also provided information regarding nutrition, resource use, and economies (Reitz and Wing 1999). It is clear that archaeologists can better examine the past by employing faunal analysis in the interpretation of archaeological sites. In doing so, archaeologists can better examine the life ways of the past. Animal remains in archaeological assemblages are the result of human behaviors with environmental resources, and the cultural perceptions of those resources (Reitz and Wing 1999).

The objective of my research study is to identify and interpret the species represented at the Tree Frog site. Since horse remains have been identified in the assemblage, I will discuss how the Tree Frog site fits into the archaeological time frame of the Protohistoric Northern Great Plains. I will discuss which body parts are represented in order to draw conclusions about whether the cultural materials are close to where the kills occurred, or if high value parts were transported away.

Since Tree Frog was excavated in two areas, I will compare the northern and southern areas, looking for similarities and differences. The primary focus of this comparison will be in comparing proportions of burned bone from each area in order to identify possible locations of hearths.

Evidence suggests that the Tree Frog site dates to the Protohistoric period and is associated with the Shoshone people. Therefore, this research will help to identify Shoshone

migrations and cultural change as they moved into Montana and adopted subsistence strategies similar to Protohistoric tribes on the Great Plains.

Local Environment

The Centennial Valley, located in southwestern Montana, is part of the Greater Yellowstone ecosystem (The Greater Yellowstone Coalition, no date). The north and south boundaries are tectonically formed mountains known as the Gravelly Range and the Centennial Range (Vanwert 2000). Between these two ranges lies an area that has been downdropped and rotated along the Centennial Fault; this is the Centennial Valley (The Greater Yellowstone Coalition, no date). The valley lies on an east-west orientation, making it important to Native American groups migrating between the Snake River Plains and the Great Plains (The Greater Yellowstone Coalition, no date).

Environmental conditions in the Centennial Valley vary seasonally. Air temperature ranges from 21°F mean maximum temperature to -9°F mean minimum temperature in the month of January (The Greater Yellowstone Coalition, no date). The month of July is the warmest with temperatures ranging from 76.7°F mean maximum temperature to 41.1°F mean minimum temperature (The Greater Yellowstone Coalition, no date). These temperatures vary depending upon elevation. Elevation at the site ranges from 6,700-7,000 feet above sea level (Sant 1992).

Precipitation is variable, with maximum amounts of precipitation in May and June. July through September generally yield the least amounts of precipitation in the Centennial Valley (The Greater Yellowstone Coalition, no date). Annual precipitation on the valley floor

averages from 14.7-27.2 inches (The Greater Yellowstone Coalition, no date). Winds are from the west.

Vegetation in the Centennial Valley consists of open sagebrush and grassland meadows. Importantly, the Centennial Valley is abundant in camas, a staple plant food for Native American groups (The Greater Yellowstone Coalition, no date).

The Tree Frog site is located (see figure 1) at the base of a rhyolite cliff, along the north slope of the Centennial Mountains (Vanwert 2000). A natural spring provides water to support aspen, willow, lodge pole, and fir trees. Seasonal grasses and plants likewise benefit from this source of water. Otherwise sagebrush covers the ridges (Sant 1992). Natural vegetation consists of sub-alpine fir and douglas fir forest (Foor 1999 and Vanwert 2000). The northern portion of the Tree Frog site is a mid-elevation aspen meadow bordering a spring-fed creek (Foor 1999 and Vanwert 2000). The southern portion is at a higher elevation than the northern portion and is located near a spring-fed creek with bordering aspen stands (Foor 1999 and Vanwert 2000).

The water and plant resources of the area, combined with access through the Continental Divide attract a variety of animal species. Currently, pronghorn, deer, elk and a variety of small game are part of the Centennial ecosystem (The Greater Yellowstone Coalition, no date). These species, as well as others, such as bison, undoubtedly occupied the area in Late Prehistoric/Protohistoric times.

Additionally, the ridge near Mud Lake in the Centennial Valley is littered with obsidian cobbles; the Tree Frog site covers the majority of this ridge (Vanwert 2000). The area containing the heaviest concentrations of cultural material lies in an area of both alluvial and colluvial deposition (Sant 1992).

The north-facing slope of the site yielded the heaviest concentrations of cultural material. The northern exposure combined with snow accumulation from early autumn until late spring, makes it unlikely that Tree Frog was occupied in the winter (Foor 1999 and Vanwert 2000). Based on site data and faunal data presented here, it is likely that Tree Frog was occupied during the time between late spring to early fall for a brief period of time (Foor 1999 and Vanwert 2000).

Two radiocarbon dates place the Tree Frog site in the Protohistoric period. Both radiocarbon dates have a 99% confidence interval that suggests the site was occupied somewhere AD 1590-AD 1790 (Beta Analytic, Inc 1998; 1999). Both dates are considered to be confirmatory in that they are recent and can only be used to confirm occupation at Tree Frog within the past 300 years (Vanwert 2000). Radiocarbon dates were taken from a bone sample recovered from the southern excavation area. These dates are confirmed by the presence of European trade items recovered at the Tree Frog site. Recovered artifacts include projectile points, pottery, glass trade beads, horse bones, a single brass ring, and other various metal artifacts (Vanwert 2000).

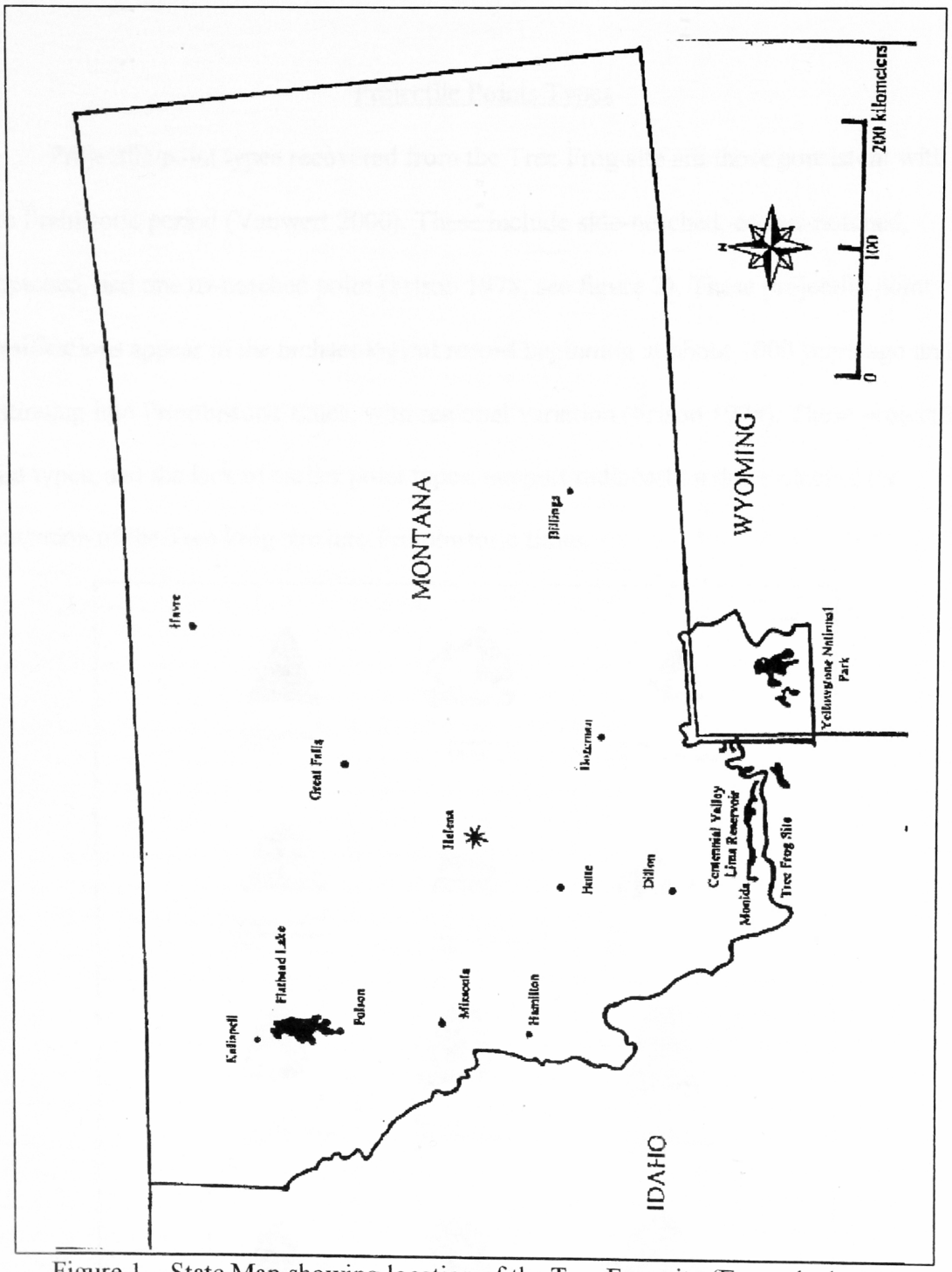
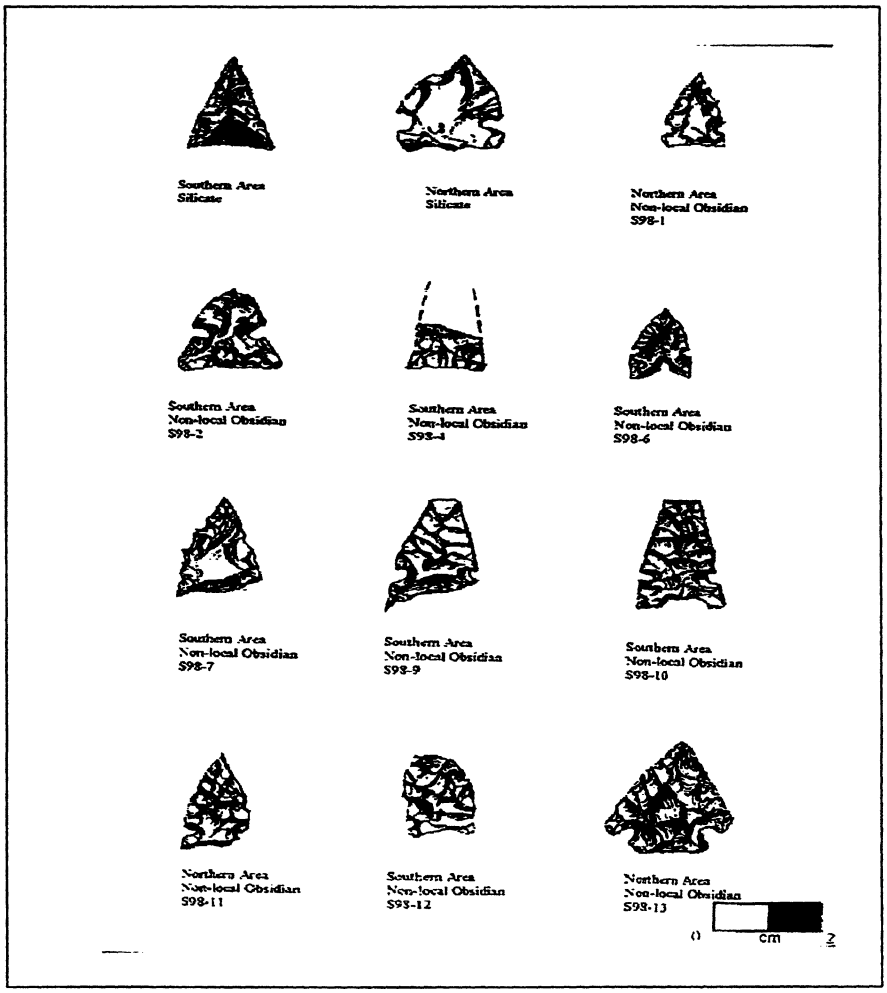


Figure 1—State Map showing location of the Tree Frog site (Espenshade 1986, Vanwert 2000)

Projectile Points Types

Projectile point types recovered from the Tree Frog site are those consistent with the Late Prehistoric period (Vanwert 2000). These include side-notched, corner-notched, unnotched, and one tri-notched point (Frison 1978, see figure 2). These projectile point classifications appear in the archaeological record beginning at about 1000 years ago and continuing into Protohistoric times, with regional variation (Frison 1978). These projectile point types, and the lack of earlier point types, support radiocarbon dates placing the occupation of the Tree Frog site into Protohistoric times.



Figure—2 Illustrations of Tree Frog Projectile Points (Vanwert 2000)

Pottery

During excavations in 1997 and 1998, nineteen pottery sherds were recovered from the Tree Frog site. These sherds are consistent with the Intermountain Tradition pottery. Intermountain Tradition pottery is associated with the Late Period Shoshonean occupations identified in eastern Idaho (Plew 2000). Intermountain Tradition pottery is typically dark gray or black, and is coarsely made. Typical vessel forms are flat based and generally resemble a flowerpot (Bulter 1981, Plew 2000). Intermountain Tradition pottery is usually associated with Shoshonean peoples.

Sites in Idaho containing Intermountain pottery are numerous and well defined. The Dietrich Phase at Wilson Butte Cave defined by Gruhn (1961) dates to the Late Prehistoric/Protohistoric period. Recovered artifacts include (but are not limited to) corner and side notched points and Intermountain Tradition pottery (Gruhn 1961, Plew 2000). Pottery sherds recovered from the Dagger Falls site, located on the Middle Fork of the Salmon River were predominately Intermountain Tradition (Plew 2000). The Dagger Falls site dates from 2000 BP into the historic period (Torgler 1993, Plew 2000). At the Wahmuza site, located in southeastern Idaho, Intermountain Tradition pottery was recovered along with European trade goods (Lohse and Holmer 1990, Plew 2000). The presence of Intermountain Tradition pottery at the Tree Frog site supports a Protohistoric date, and suggests the possibility that Tree Frog is a Shoshone site.

European Trade Items

The most definitive evidence supporting a Protohistoric date comes from the presence of European trade artifacts recovered at the Tree Frog site (see figure 3). Items include a single blue glass trade bead, a brass finger ring, and several pieces of wrought iron (Vanwert

2000). The introduction of these items dates to between AD 1670 to AD 1820 (Quimby 1966).

Aboriginal trade was established long before the introduction of European trade goods. A complex trade network existed in North America linking every tribe to one or more of its neighbors (Wood 1980). Such networks functioned to move trade goods in prehistoric times as well as the Protohistoric period (Wood 1980). If Wood's (1980) model is correct, the Tree Frog site is quite possibly on the trade route linking groups on the Plateau with the Shoshone Rendezvous trade center in southwestern Wyoming, and consequently connecting the west to the Mandan/Hidatsa trade center on the Missouri River in North Dakota and the Utes to the south. Quimby (1966) and Woods (1980) discuss the possibility that European trade goods reached various aboriginal groups through those trade centers without direct contact with Europeans.

The presence of trade goods has been documented at several sites in southeastern Idaho. For example, metal artifacts and trade beads have been recovered from several sites in the Birch Creek Valley (Swanson, et al. 1964). Plew (2000), states that the Wahmuza site is among the most important sites excavated relating to the intrusion of Euro-American culture onto the Snake River Plain. Among artifacts recovered from the Wahmuza site are musket balls, glass trade beads, and horse harness parts (Plew 2000). At the Wahmuza site, Holmer (1990) notes that one fire hearth dating to AD 1850 contained Intermountain Tradition pottery and side-notched points in direct association with glass trade beads. These sites are similar to Tree Frog in that they can be dated to the very Late Prehistoric or early Protohistoric period.

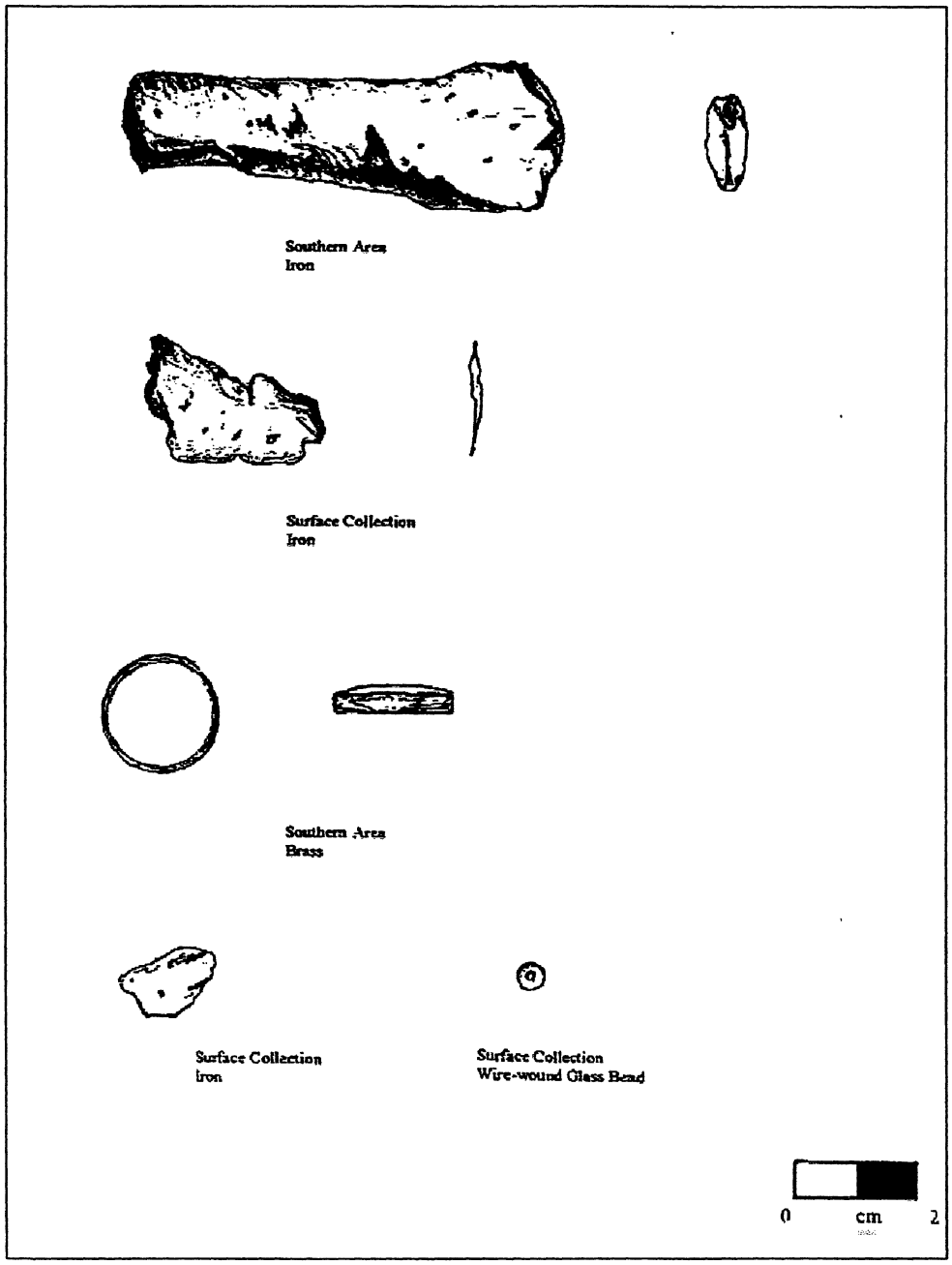


Figure 3—Illustrations of European trade goods from the Tree Frog site (Vanwert 2000)

The Late Prehistoric/Protohistoric Period

Artifacts recovered from the Tree Frog site, in combination with radiocarbon dates (Vanwert 2000), obsidian hydration dates (Origer 1999), and the present of horse remains (to be discussed later) suggest Tree Frog to date to the Protohistoric period.

The Protohistoric period was a distinct and critical era. During this time, many (if not most) aboriginal groups acquired elements of Euroamerican material culture and had become aware of Anglo presence via brief direct contact, or by communication with other groups (Arkush 1990). Trade is a major factor in defining the Protohistoric period. One of the most common trade item discovered in the archaeological context are glass trade beads (Arkush 1990). Other indicators include the introduction of Old World disease, iron implements such as knives, axes, awls, fishhooks, and arrow points (Arkush 1990). Perhaps the most important Protohistoric marker, however, is the horse.

Horse Bones

Tree Frog contains the remains of at least one horse. The introduction of the horse lead to the development of fully mounted bands with shifting leadership and eastward and northward expansion onto the Plains to exploit bison (Steward 1938, Arkush 1990). According to Haines (1938) and Vernam (1964), some Shoshone bands were mounted by 1690 or 1700. If the Northern Shoshone were mounted as early as 1690, Tree Frog could fall into the Protohistoric time frame somewhere in the late 1600's or early 1700's. There is some ethnographic discrepancy as to when the Shonshone actually acquired the horse; this will be discussed in Chapter IV.

Tri-Cultural Convergence

The Centennial Valley lies in an area of cultural convergence between the Great Basin, the Great Plains, and the Columbia Plateau (see figure 4). This convergence, in combination with the introduction of the horse, and European trade good lead to complex human interactions that can be seen in the archaeological record (Vanwert 2000). These three cultural regions must be considered when discussing the Tree Frog site.

The Great Plains

The greater interior of the North American continent was designated as the Great Plains in the early twentieth century (Wood 1998). According to Frison (1978:1), "geographically the Great Plains extend from well into Canada to the Rio Grande on the Mexican border and from the Rockies to the Eastern Woodlands." However, it is acknowledged that the western boundaries, although sometimes distinct, occasionally extend to intermontane basins that extend deep into the Great Plains (Frison 1978, Wood 1998). Likewise, the eastern boundaries are even less distinct in that there is no contrast between mountain slopes and flat plain (Frison 1978).

The term Great Plains is also used to define cultural boundaries. Aboriginal groups living on the Great Plains exploited a number of different plants and animals. Vegetation on the Plains included a variety of grasses, forbes, and shrubs that supported gazing mammalian herds (Frison 1978). Deer, pronghorn, and bison were the predominant species supporting hunter-gatherer groups living on the Great Plains.

Aboriginal Great Plains groups moved often in order to locate and exploit subsistence resources. It is likely that groups moved frequently, following bison herds; and exploiting plants resources (Wood 1998). The introduction of the horse to the Great Plains ultimately brought about significant cultural changes to hunter-gatherer groups subsiding off of bison procurement (Frison 1978:72-73). One significant change would have undoubtedly been an expansion of hunting territory.

The Great Basin

The Great Basin geographically lies between the Rocky Mountains and the Sierra Nevada. It includes nearly all of Nevada and Utah, the eastern border of California, the

western portion of Colorado, southwestern Wyoming, all of southern Idaho, and southeastern Oregon (Fagan 2000). The region is environmentally diverse with extreme variation in topography, climate, vegetation, and animals (Fagan 2000). For aboriginal peoples, food supplies would have varied year to year depending on rainfall (Jennings 1978).

Food resources also would have varied depending on where groups were within the region. Exploitable subsistence animals would have included deer, pronghorn, bighorn sheep, a variety of bird species, rabbits, anadromous fish, and insects. However, groups living in the Great Basin would also have been extremely reliant upon plant resources (Fagan 2000). Seasonal movements would have been necessary in order to utilize Great Basin resources.

Evidence suggests that sometime between AD 1250 and 1450, Numic-speaking groups expanded into the Great Basin; one such group would have been the Shoshone (Fagan 2000, Plew 2000). The Numic-speaking people replaced the previous Fremont culture by AD 1250 to AD 1350 and consequently expanded into most part of the Great Basin (Fagan 2000: 277).

The Shoshone were among the first group to acquire the horse, which would have allowed for rapid increase in territory. As Shoshone peoples moved into larger portions of the Great Basin, it is likely that they moved east onto the Great Plains as well. The movement of Shoshone groups onto the Great Plains is evidenced by the Wind River Shoshones of Wyoming (Hansen 1998). The Wind River Shoshones reached Wyoming in roughly the fifteenth century, and can be archaeologically traced by ceramic, stratigraphic, and rock-art data (Wright 1978).

There is evidence both ethnographically and archaeologically that the Shoshone occupied portions of central Idaho. According to Steward (1938:186):

> Shoshoni had penetrated this region and established comparatively large villages on the Lemhi River and several small villages in the isolated places in the mountains. Some were even located east of the Continental Divide—the Bitter Root Mountains in western Montana. In Lewis and Clark time, 1806, the former were a loose band possessing many horses, hunting buffalo, and even engaging in some warfare under a true chief.

The Shoshone moved rapidly into many areas of the Northern Plains and Columbia Plateau. The immediate conclusion is that (based on ethnographic information about the Shoshone accompanied with the presence of Intermountain Tradition pottery) the Tree Frog site is associated with the Shoshonian speaking peoples.

The Columbia Plateau

The Columbia Plateau is located in the area between the Pacific coast and the Great Basin; it is bisected by two rivers: the Columbia River on the southern Plateau and the Fraser River on the northern Plateau (Fagan 2000: 231). The western boundary is the Cascade Mountain range with the eastern boundary extending to the Rocky Mountains (Ray 1939). The Plateau is linguistically divided with Salish speaking peoples in the north and along the Pacific coast, and Penutian speaking peoples along the middle and upper Columbia (Fagan 2000).

The Plateau is environmentally both sage/grassland in the southern areas and more forested in the northern Fraser River area (Fagan 2000). Since both the Columbia and the Fraser Rivers are important salmon spawning runs, salmon was an important food staple on the Plateau, as were root and plant resources (Fagan 2000, Ray 1939).

The Plateau groups lived in clan-dominated societies with a hierarchically structured class structure including some families that belonged to higher status groups and smaller political units within a larger political unit, and fluid village structure (Ray 1939, Vanwert 2000).

While the Plains groups did not regularly use fish resources like the Plateau groups, the Plateau peoples did acquire some Plains characteristics upon the introduction of the horse (Kopper 1986, Jennings and Norbeck 1964). One of the earliest trappers, Alexander Ross, noted in 1811 that Plateau groups had vast number of horses (Ross 1904, Browman and Munsell 1969). The acquisition of the horse would have undoubtedly expanded Plateau cultural boundaries and lead to the melding of cultural traits between the Plateau, the Plains, and the Great Basin.

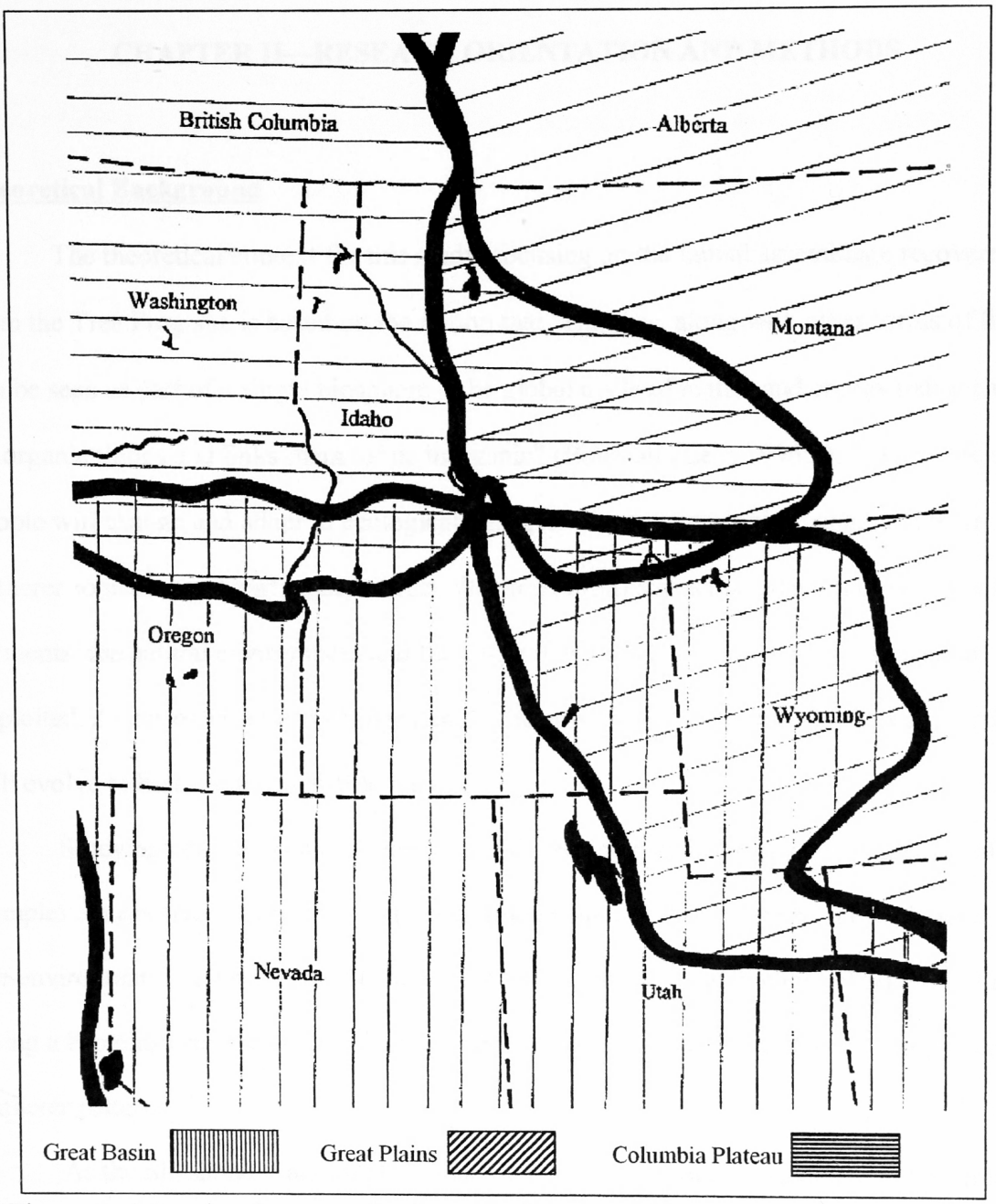


Figure 4—Map showing area of estimates culture areas (D'Azevedo1986, Walker 1998, Frison 1991, and VanWert 2000)

CHAPTER II—RESEACH ORIENTATION AND METHODS

Theoretical Background

The theoretical context for this study, focusing on the faunal assemblage recovered from the Tree Frog site is based on the notion that "Humans, along with other forms of life, can be seen as part of a single biosphere—the global cycle of matter and energy that includes all organic things and links them to the inorganic" (Bates and Lees 1996:2). The culture of a people will change and adapt to ecological changes. The source of this change in hunter-gatherer societies is of particular interest. Steward (1938) states that adaptation involves two elements: the natural environment and the cultural devices by which the environment is exploited. As the environment changes under the pressures of exploitation, cultural practices will evolve to best use the available resources.

Studying culture from this view point is in seeing human life and an awareness of the complex, interactive relationship that exists among cultural systems, human populations, and the environments in which they operate in a holistic way (Reitz and Wing 1999). Tree Frog, being a Protohistoric Shoshone site, may reflect a changing pattern in Shoshonean hunter-gatherer patterns.

As the Shoshone, traditionally occupying a large territory, expanded onto the Great Plains, "the Northern Shoshone departed radically from their western kin" (Steward 1938:46). The Northern Shoshone were economically hunters rather than seed gatherers; they ranged across the Rocky Mountains to hunt bison on the Great Plains (Steward 1938). This change in Shoshone subsistence, and the departure from traditional Shoshonean life ways, are important issues to be considered when examining sites such as the Tree Frog site. The

primary factors for consideration at Tree Frog in this study are 1) resource availability (what species were exploited); 2) what activities took place at the site; and 3) does Tree Frog represent a transition from Great Basin subsistence strategies to those typical of the Great Plains.

Resource Availability

Resource availability is a determining factor in hunter-gatherer movement, seasonality, and evolution. For the terms of this study, species availability will be the main consideration. Hunter-gatherers tend to move seasonally in order to exploit nondomesticated resources (Bates and Lees 1996:13). As environmental conditions and resources fluctuate, hunter-gatherers are highly adaptable to such change (Bettinger 1991). With the introduction of the horse, Shoshonean hunter-gatherers (at least some groups) adapted to a new subsistence strategy. Binford (1980) suggests that "mobility is a positioning strategy, it may well be most responsive to structural properties of the environment, that is to say the particulars of food distribution." The acquisition of the horse undoubtedly "revolutionized Shoshoni economy by making it possible to use new methods of hunting which yielded greater wealth in food and hides" (Steward 1938). This would have allowed for greater trading opportunities. According to Steward (1938: 203), "the Shoshone traded buffalo skins to the Yahandüka for seeds, roots, dried crickets, and salmon, and to the Nez Perce for horses." Likewise, trade between native groups and Europeans is noted by (Wood 1980:98), who suggests that, "an increase in the volume of trade was brought on by the Europeans' desire for fur and robes." This would have affected Shoshonean economy as well as other native groups.

The introduction of the horse to North America would have lead to huge changes in Native American societies. Consequently, resource availability changed; this change was not in the form of shortage, but rather in the form of increased opportunity by the addition of a domesticated species to the environment. Shoshonean economics would have been affected upon the acquisition of the horse.

Site Formation and Activities

Site formation process is important in understanding the "causes of particular kinds of behavior that produce distinct and identifiable archaeological signatures" (Bettinger 1991:73). With the introduction of the horse, it has been suggested that the "Indian pony could pack or drag a load eight times as great as the Indian dog, and an average day's march using the horse was two and one-half to three times as far as that using dogs" (Ewers 1955:307,308, 325). Since there is evidence of horses at the Tree Frog site, it is likely that the inhabitants were capable of transporting meat greater distances.

Hunter-gatherers recognized that some parts of an animal carry far more useful meat and fat on certain parts of their bodies over others (O'Conner 2000:68). In the case of individual hunting of large game, it is likely that hunting activities took place some distance away from the "home-base." Decisions would have been made regarding what to bring back and what to leave behind (O'Conner 2000: 68). Because of this, Binford (1978) argues that butchering events will produce two kinds of faunal assemblages: 1) the kill/butchering location characterized by bones representing low utility parts and; 2) an area of storage or consumption characterized by high utility parts.

Typically, the butchering local, characterized by "low utility parts" will consist of metapodials, phalanges, lower limb, and head bones (O'Conner 2000). These parts carry little

meat and are generally indicative of kill/butchering sites. The storage/comsumption area on the other hand will have an abundance of "high utility parts." Generally this consists of limb and girdle bones, and a shortage of head and foot bones (O'Conner 2000).

In the case of significant portions of unidentifiable bone fragments, there are three possibilities. Fragmentation of bone can occur from 1) butchery and pounding of bones in order to extract marrow; 2) unintentional trampling or; 3) unintentional breakage resulting from excavation (Davis 1987:26). The faunal assemblage from the Tree Frog site contains a significant amount of fragmented bone.

Highly fragmented bone may show signs of burning. Evidence of burning may provide information about cooking techniques, waste disposal, or sacrificed offering (Reitz and Wing 1999: 231). The roasting of bones and fragmenting them is typically done in order to extract the marrow; this procedure leaves very little of the bone intact and produces large quantities of bone debris (Davis 1987). A significant portion of fragmented bone from the Tree Frog site shows signs of burning.

Transitional Characteristics: Great Basin to Great Plains Subsistence Patterns

As previously stated, Great Basin people were highly dependant upon plant resources, whereas Great Plain groups primarily subsided off of bison hunting. With the acquisition of the horse, Great Basin groups, moving north and east, began to become increasing reliant upon hunting activities over plant procurement. This is not to say that all Shoshone groups acquired all Great Plains characteristics; rather, only those groups that acquired the horse early, and moved north and east for bison hunting, changed to a great extent. Hultkranz (1974:207) states that the Wind River Shoshones of Wyoming appeared to share many traits

typical of the Plains, including tribal buffalo hunts, tribal organization with a central chief, and the tribal Sun Dance.

Shoshone sites on the Northwest Plains have primarily been identified based on the presence of Intermountain Tradition pottery (Hansen 1998). For example, Frison (1978) notes,

> what appears to be a Protohistoric Shoshonean campsite is located along the shore of Seminoe Lake, an artificial body of water along the North Platte River northeast of Rawlins, Wyoming. The site to date has produced sherds of both fired and steatite vessels; brass fragments that appear to have been hammered with a stone tool; a broken blue European trade bead; and side-notched projectile points.

Likewise, occupations at the Eden-Farson site in the Green River Basin, and the Big Goose Creek and Piney Creek sites of northern Wyoming contain elements that appear to be Shoshonean, and are either Late Prehistoric or Protohistoric (Frison 1971, Hansen 1998).

It is evidence such as this that hint at the existence of transitional groups that have both retained Great Basin traditions such as pottery making, but also adopted new hunting strategies such as those on the Great Plains. Bettinger (1991) suggests, "cultural preference ought to be reexamined as part of a larger attempt to account for human behavior." In many instances, subsistence may be the driving force underlying cultural change. Therefore, a shift in subsistence would result in a shift in other cultural patterns.

Field Methods

The Tree Frog site was excavated in July and August of both 1997 and 1998. Two areas of excavation were selected: the northern area and the southern area (see figure 5),

which were given individual feature numbers. Excavation units within each area were likewise given separate feature numbers. Features within the northern and southern areas were excavated in 2 X 2 meter units. Corners were established to the site datum via a transit. Arbitrary levels were excavated in 20-centimeter levels. Depth was measured from the highest corner of the 2 X 2 units. Excavation continued until sterile soil was reached, or under lying talus was reached. Deposits were at no greater than 60 centimeters, and averaged 40 centimeters. Each arbitrary level received its own feature number. Concentrated cultural materials were subdivided into quadrants and piece plotted in situ with feature numbers remaining constant for the remainder of the level.

Excavations in 1998 were conducted under the same procedures as the 1997 excavations. Five excavation units were excavated in 1997, and six were excavated in 1998. The 1997 excavation concentrated on the southern area. The 1998 excavation concentrated on the northern area. Features within both the northern and southern areas were excavated on a grid system. The main focus was to excavate horizontally distinct areas in order to evaluate spatial divisions (Vanwert 2000).

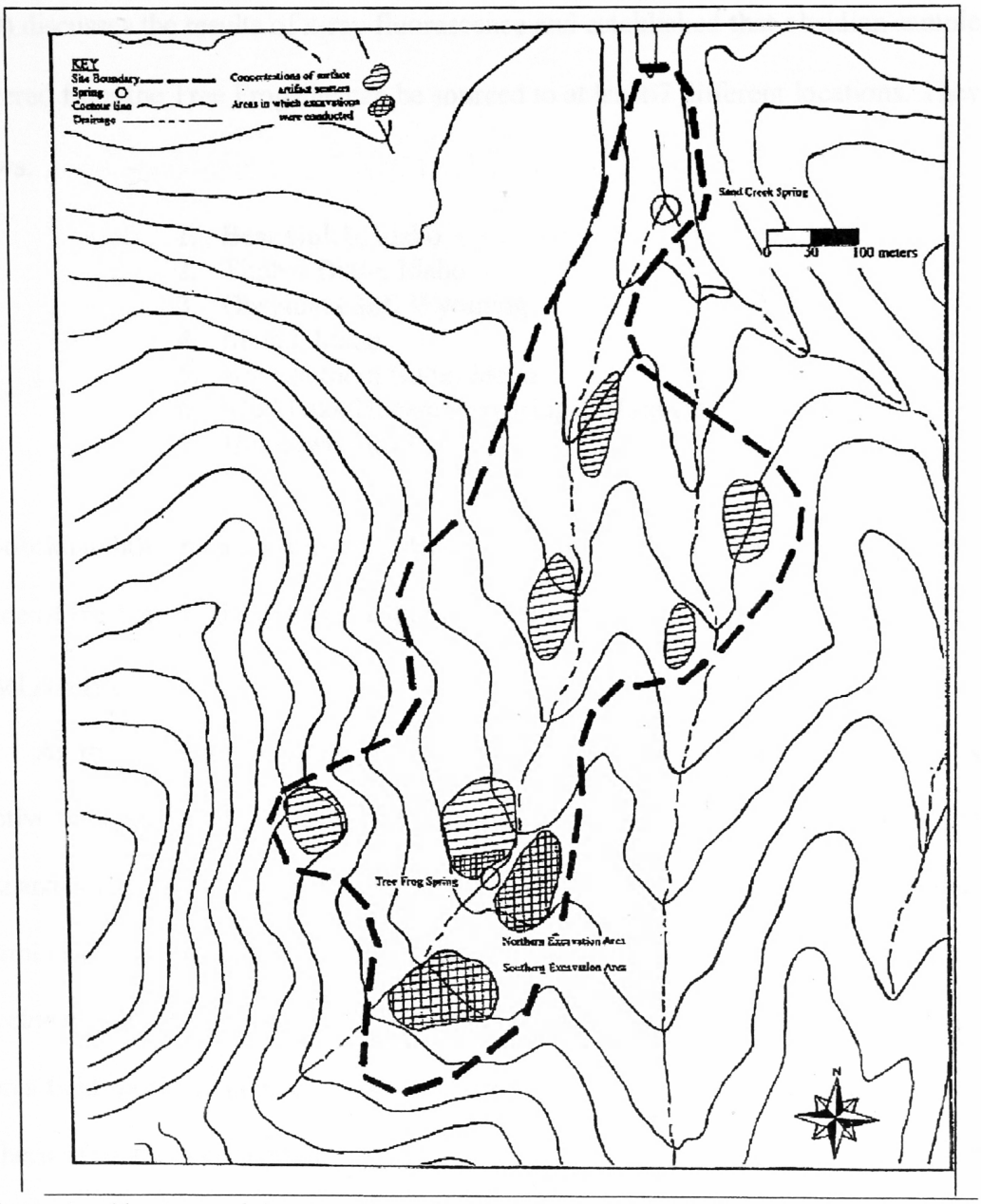


Figure 5—Site Map of the Tree Frog site showing northern and southern excavation areas (Sant 1992:8).

Laboratory Procedures

Radiocarbon dating (see chapter I), obsidian hydration, and x-ray florescence (see Vanwert 2000) were conducted in order to establish age and obsidian sourcing. Vanwert

(2000) discusses the results of x-ray fluorescence and established that obsidian samples recovered from the Tree Frog site can be sourced to at least 7 different locations. They are as follows:

1. Bear Gulch, Idaho
2. Timber Butte, Idaho
3. Obsidian Cliff, Wyoming
4. Malad, Idaho
5. Big Southern Butte, Idaho
6. Mud Lake/Huckleberry Ridge, Montana
7. Unknown location

Non-obsidian lithic material was considered to be non-local since the site of origin was outside of the Tree Frog site boundaries (Vanwert 2000).

Faunal Analysis

Animal bones in archaeological sites are the direct result of human behavior including selective hunting, specific butchering techniques, and site usage (Daly 1969, Davis 1987, Reitz and Wing 1999). Faunal material from the Tree Frog site was analyzed in order to determine species, age at time of death, element, evidence of burning, butchery marks, shovel/trowel marks, and evidence of rodent/carnivore gnawing. Since all bags had been given a field specimen number, these numbers were used to correlate bags to either the northern of southern excavation area. Tags were created for each specimen (individual bag), which contain all recorded information regarding the bag contents. Tags also included feature number and field specimen number in order to retain provincial information. Further, a database was created in order to tabulate the results (see chapter III).

All bones were examined carefully to determine species. The University of Montana Zoological Museum's comparative faunal collection was used in the determination of species. All identifiable bone was bagged individually with a tag containing specimen

information. Unidentifiable bone was separated into two categories: burned and green bone. Unidentifiable burned bone was counted, weighed, and bagged collectively with a tag indicating specimen information. Unidentifiable green bone was treated the same. All bags from a particular feature were bagged collectively in a single feature bag.

Faunal remains were examined in order to determine age at time of death. This was accomplished by looking at overall size, although variation between age and size exists (Reitz and Wing 1999). Therefore, age was determined by the combination of size, bone porosity, closure of epiphyses, and when possible tooth eruption and wear. Other elements that were considered included bone surface sculpting, as seen in very old animals, as ligaments and tendons ossify (Reitz and Wing 1999). Age at time of death is important in that it can yield information regarding seasonality. Age within an animal population varies seasonally; if a human population targets a specific age group, this will be reflected in the archaeological record (Reitz and Wing 1999).

As stated above, the significance of burned bone within an archaeological faunal assemblage cannot be overlooked. All bones from the Tree Frog site were examined for traces of burning. Collectively bagged burned bones were examined for degrees of burn. Three categories were established 1) burned—signified by a complete blackening of the fragment or a portion of the fragment; 2) charred—the fragment or a portion of the fragment was lightly blackened; and 3) calcified—the fragment was whitened and calcified. Although these were collectively bagged, degrees of burning were noted on the specimen tags.

In examining the faunal specimens, I took care to look for butchery marks. Butchery marks were characterized by whether the bone was cut, chopped, or sheared. This examination was conducted visually, and confirmed with further inspection by hand lens and

microscope. The information was recorded on the specimen tags, as well as in the database. By examining butchery marks, insight can be gained regarding technology. By looking at butchery marks under a microscope it can be seen that various tools make different marks. For example, tools made of metal make a very different mark than tools made of stone (Reitz and Wing 1999). All bones were examined for carnivore and rodent gnawing. This is important since gnawing can sometime resemble human modification. All bone suspected of containing gnaw marks were carefully examined under a microscope in order to rule out the possibility of butchery marks.

Weights were taken on all specimens. Weights were taken on all individually identified bone. Collectively bagged burned and green bone was weighed collectively. Although weigh is not used as an interpretive factor for this study, I have included weigh for future reference.

In using the described laboratory methods it is possible to add to the existing body of faunal analysis for the region. Likewise, since Tree Frog can be firmly placed into the Protohistoric time frame and can be considered Shoshonean, this information can allow for insight as to changing Shoshonean patterns and expansions as European cultures moved west.

CHAPER III—RESULTS OF ANALYSIS

The faunal analysis conducted at the Tree Frog site yielded a variety of expected species. A table of species represented was created to show the total number of specimens identified (NISP) (see figure 6).

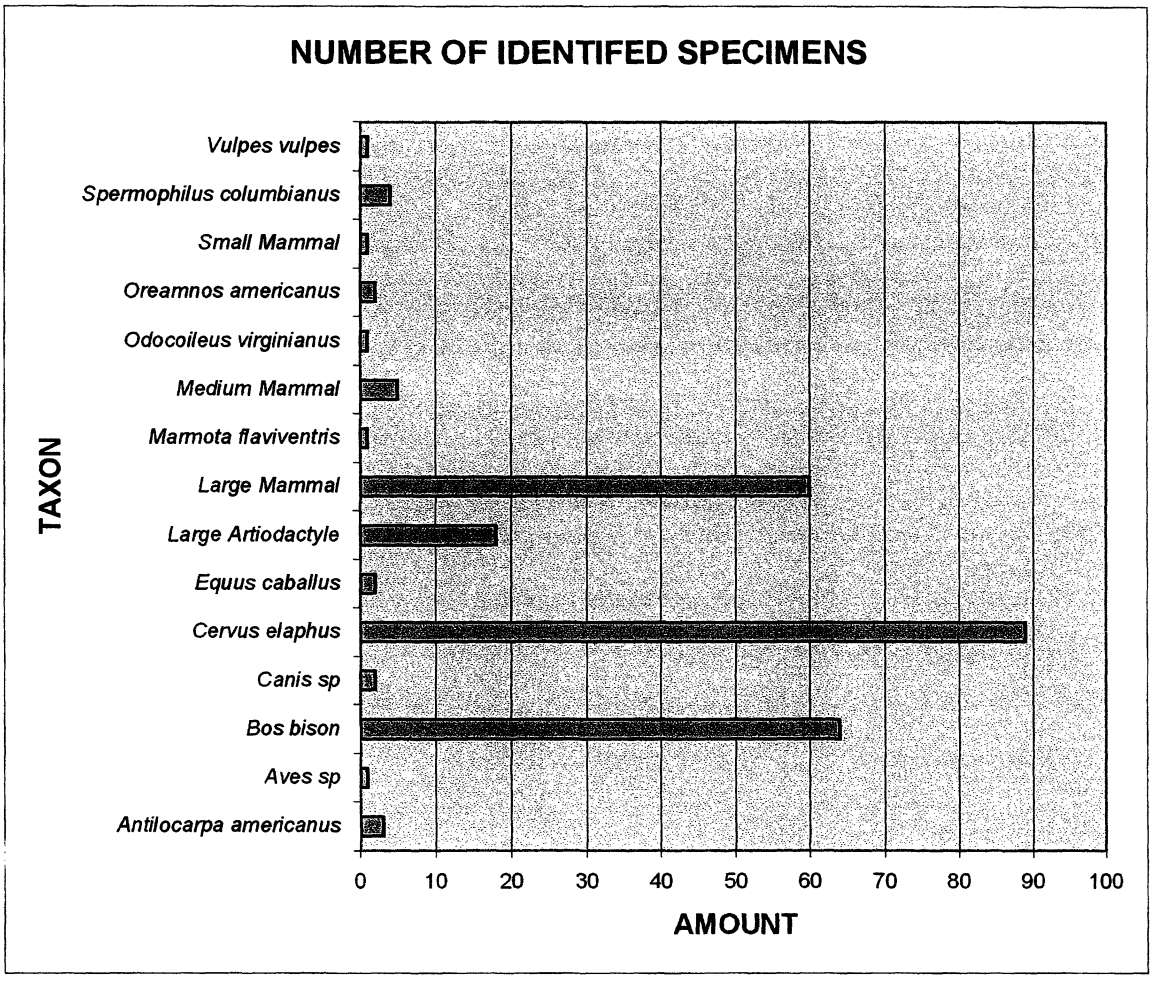


Figure 6—Total number of identified specimens.

In examining this table, it can be seen that large mammals, bison (*Bos bison*), and elk (*Cervus elaphus*) dominate the assemblage. The domination of the assemblage by large game animals suggests that large game were preferred over smaller game.

Minimum Number of Individuals

My first hypothesis was to determine the Minimum Number of Individuals (MNI) represented in order to determine what type of game procurement had occurred at Tree Frog. Rather than using Number of Identified Specimens (NISP), MNI eliminates distortion in results and interpretation of the overall faunal analysis (O'Conner 2000:58-59). The results, as seen in Figure 7, show that three elk (*Cervus elaphus*) and four bison (*Bos Bison*) can be identified. One individual specimen can be accounted for of the following species: Fox (*Vulpes vulpes*), Mountain Goat (*Oreamnos americanus*), Deer (*Odocoileus virginianus*), Marmot (*Marmota flaviventris*), Horse (*Eqqus caballus*), Canine (*Canis sp*), Pronghorn (*Antilocarpa americanus*).

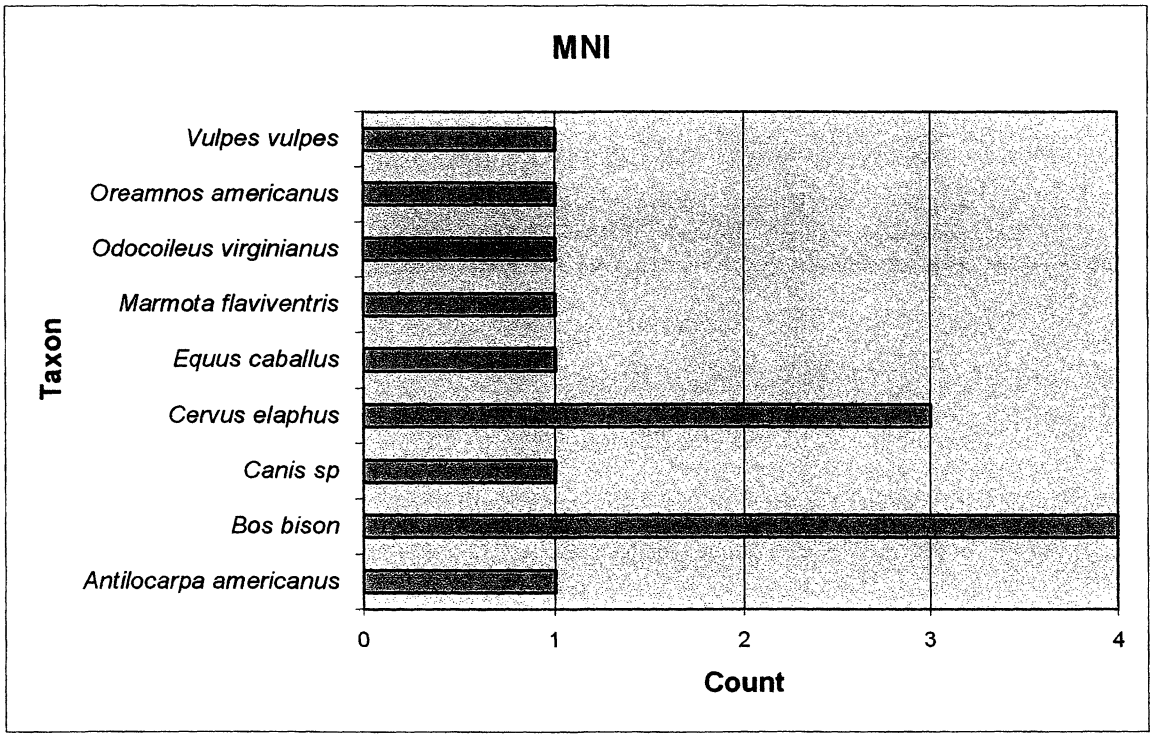


Figure 7—Table of Minimum Number of Individuals

The data support a single occupation aimed at large game procurement, based on the number of large game animals recovered and the single deer specimen. Other species represented by one MNI are nonetheless important; however, these generally fall into a category of smaller game, with the exception of the horse, which was probably not a food animal.

Tree Frog, as stated in chapter II, was excavated in two areas, the northern and the southern area. In order to determine whether a difference in species distribution was present between the two excavation areas, a table was created in order to compare these areas. This was done only for large game (Figure 8 and Table 1). These results were based on NISP results.

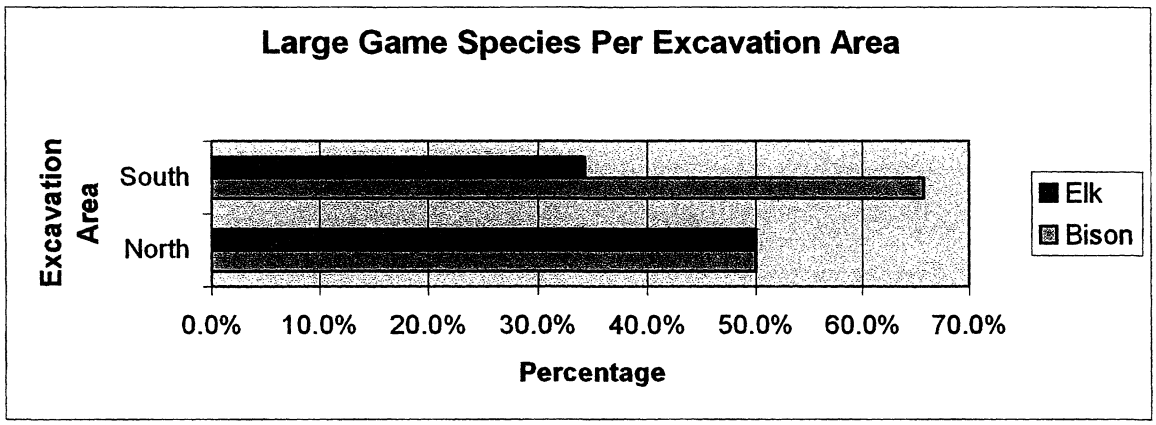


Figure 8—Large game distribution between northern and southern excavation areas.

	N	S	All
Bos bison	15	23	38
Cervus elaphus	15	12	27
All	30	35	65

Chi-Square = 1.643, DF = 1, P-Value = 0.200

Table 1—Chi-Square Results for total site large game procurement.

In looking at the results of this comparison, it seems there is very little difference between the northern and southern excavation areas. There are slightly more bison in the southern area, however chi-square value suggests that this is not significant.

Domesticated Animals Represented

Canis sp. Representation

At least one *Canis sp.* (likely dog) is represented at the Tree Frog site. Two elements were recovered; these include a single large incisor and a right phalanx, both recovered from the southern excavation area. "It has been stated that the dog is one of the oldest cultural elements introduced into the Americas by immigrants from Asia" (Haag 1949: 27). Although a gray area, dogs were not generally used for food in the northern Great Plains (Marquardt 1985:74). According to Morey and Wiant (1992), dog burials (on the Great Plains) coupled with the lack of modification of the bones, suggests that their role may have been more than utilitarian. This evidence suggests that dogs had an affectionate relationship with human. The *Canis* remains were located in an area I consider to be a butchering and processing site; however, no cultural modification or processing is indicated on either of the *Canis* elements, although it would be unlikely on either, if the *Canis* specimen were used for food.

Prior to the introduction of the horse, the dog was used as the primary beast of burden (Wilson 1963:359). Upon the acquisition of the horse, the dog was replaced as beast of burden and probably acquired a new cultural role. According to Olsen (1974), the dogs of the Plains and of the Southwest were coyote sized, with shorter faces, and a lower jaw of more depth than the coyote. The *Canis* elements recovered at Tree Frog fit well within this description; however, with only two elements present, a strict determination is difficult to make.

Eqqus caballus Representation

Horse remains were recovered from the southern excavation area of Tree Frog. As stated previously, this along with European trade items, the Late Prehistoric/Protohistoric projectile point types, and radiocarbon dates place the site firmly in the Protohistoric time frame. The presence of horse remains is important in characterizing a shift in Shoshonean subsistence patterns in that it greatly increased territory and hunting range.

With the acquisition of the horse by Plains groups, subsistence practices on the Plains were intensified rather than changed (Wilson 1963). The Shoshone, however, began to move north and west upon the acquisition of the horse. This led to changes in subsistence and newly acquired Plains cultural patterns such as bison hunting (Steward 1938, Arkush 1990). Horse remains at the Tree Frog site, in combination with bison remains and Intermountain Tradition ware pottery, clearly demonstrates this movement of Shoshonean bands north and west in order to exploit large game such as bison and elk.

Although the horse remains, including two teeth recovered from the southern excavation area, show no signs of burn of butchery or cultural modification, it cannot be ruled out that the horse was not used for subsistence since teeth do not generally show signs of butchery. The two teeth showed signs of heavy wear, indicating that the animal was an older adult. It is possible that the horse was no longer useful as a pack animal and was at that point utilized as a food resource, as some southern Shoshone groups utilized horses for food (Steward 1938).

Elements Per Excavation Unit

In looking at the northern and southern excavation units for variability in element distribution, no clear pattern of variation can be seen (see figures 9). This would indicate that

similar processing activities are being performed at both areas of excavation. Both areas are high in low utility elements such as lower limb, foot, and head bones. It is likely that butchering activities took place at both areas of excavations. Further, it is likely that these areas of butchery are very close to the actual kill site, based on the elements present.

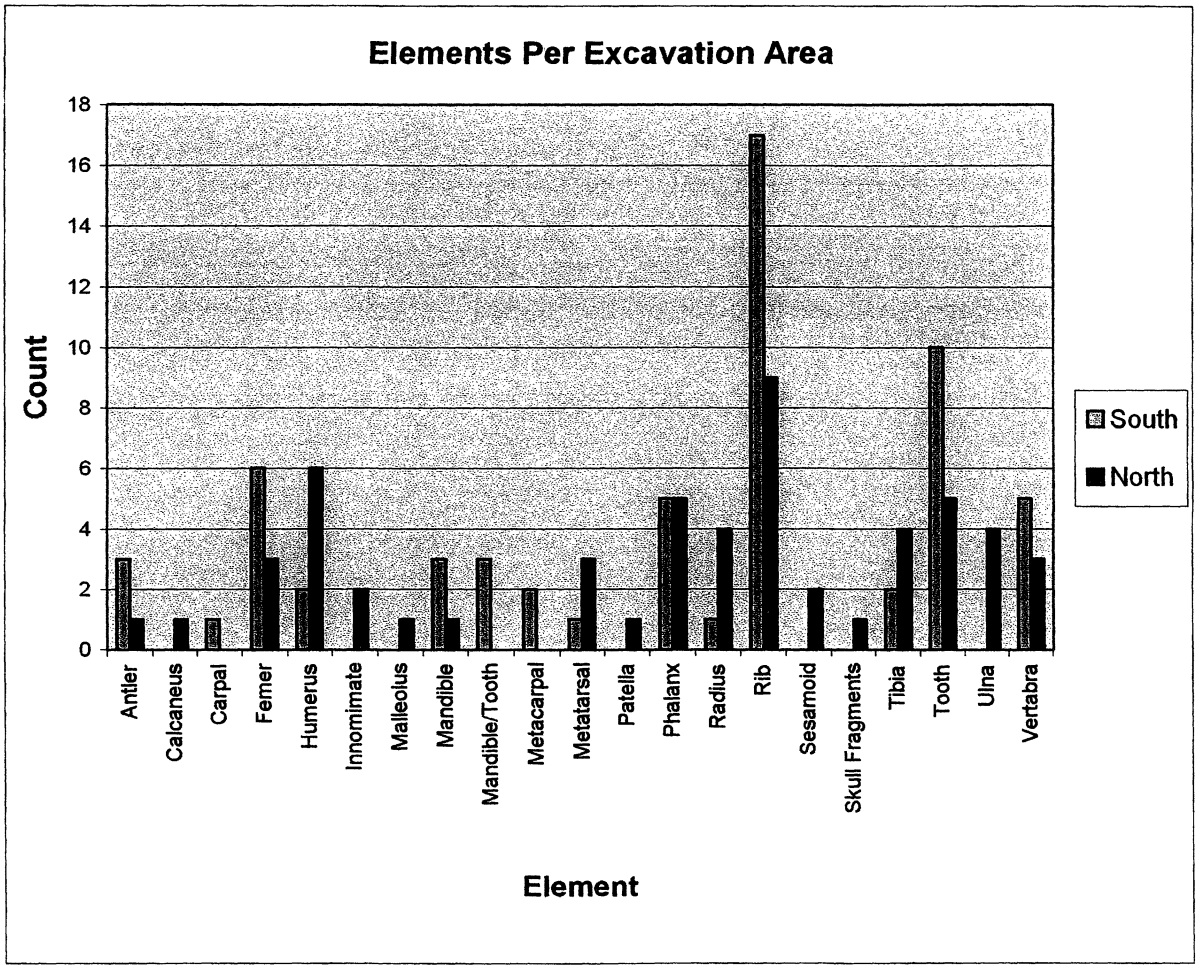


Figure 9—Elements identified from the northern and southern excavation units.

Butchery

Only 5.95% of bone recovered from Tree Frog showed cut, chop, or shear marks. These were primarily cut marks found on the proximal and distal ends of the bones. Since many of the bones were weathered and/or gnawed by rodents and carnivores, butchery marks

may not be well represented. In my examination of butchery marks, I was unable to determine if stone tools, or metal tools produced the cut marks.

Unidentifiable Burnt and Green Bone Fragments

In examining the portions of unidentifiable burnt and green bone fragments, which comprise the majority of recovered bone (see figures 10), there is some difference in the overall amounts between the northern and southern excavation areas. In the southern area, there were more green fragments than burnt. This trend is demonstrated in Table 2 below. Burnt bone from the southern area, when compared to the northern area, yielded less burnt bone overall.

The northern area yielded similar amounts of burnt and green fragments. The high number of heavily fragmented bone indicates that marrow and bone grease processing activities were also taking place at the butchering site (Greiser, Greiser, and Vetter 1985). Clearly, the excavated portions of the Tree Frog site are butchering and processing activity areas. This is indicated by the presence of low utility body part elements and burnt and green crushed and shattered bone. Since butchering and processing activities are represented at Tree Frog, I infer that the animals were killed close to the site.

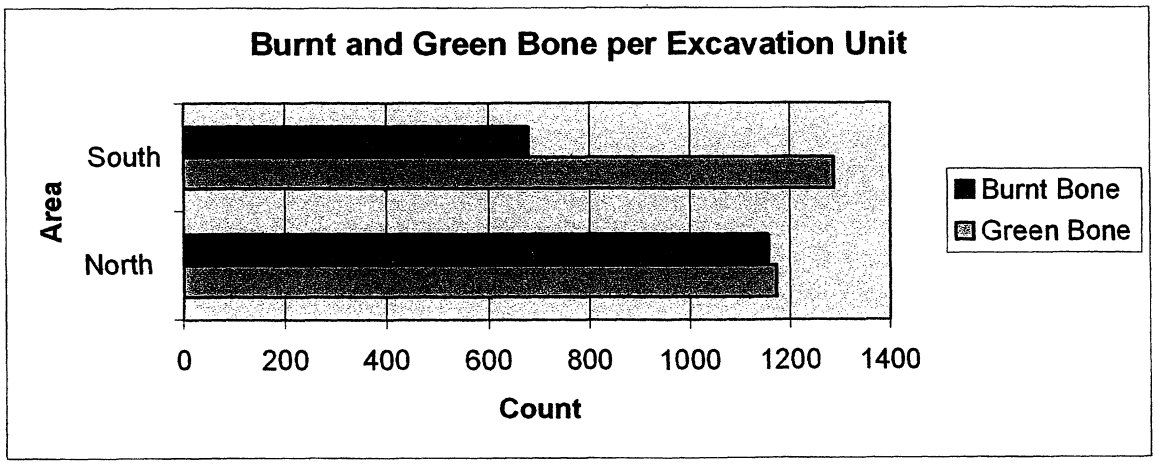


Figure 10—Burnt and Green bone counts per excavation area.

	N	S	All
Burnt Bo	1156	679	1835
Green Bo	1172	1287	2459
All	2328	1966	4294

Chi-Square = 99.562, DF = 1, P-Value = 0.000

Table 2—Chi Square results for green and burnt bone per excavation area.

Age of Animals

In order to determine seasonality at Tree Frog, the age at time of death was determined for all specimens when possible. In order to determine seasonality, age in herd distribution of *Bos bison* was considered. It can be seen (see figure 11) that *Bos bison* is represented by 68.89% adult elements, 25.0% subadult elements, and 11.11% juvenile elements. If the butchered animals represent a single occupation event, or a seasonally reoccurring short visitation, then this would indicate a nursery herd with adults (most likely females), subadults (male or female) that have not yet reached sexual maturity, and juveniles from previous Spring calving. From this, I infer that Tree Frog was occupied in late summer to early fall.

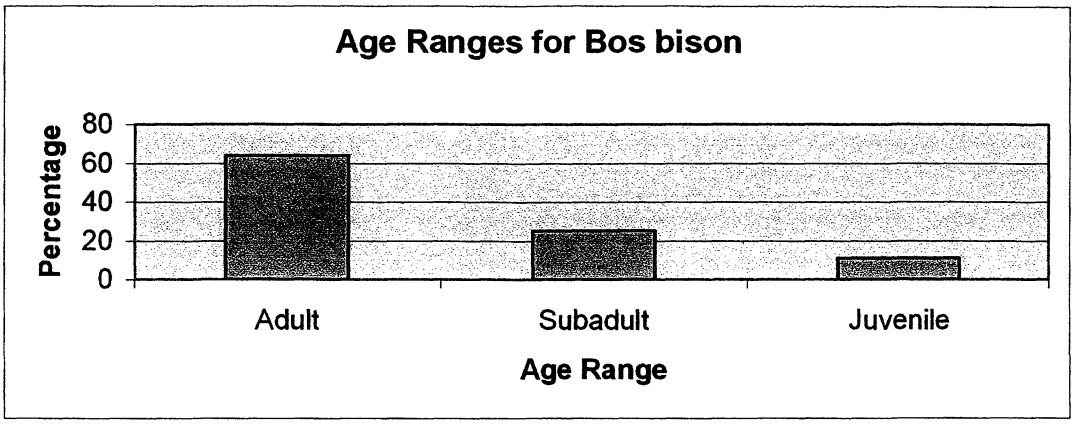


Figure 11—Age ranges from *Bos bison* elements

CHAPTER IV—IMPLICATIONS AND CONCLUSIONS

From the analysis of the faunal remains recovered from the Tree Frog site, it can be concluded that the excavated portions are part of a large game butchering and processing activity area. This is indicated by the presence of low utility elements such as lower limb bones, feet, and head parts. The high proportions of shattered bone, both burnt and green, indicate the possibility of marrow and bone grease processing at the site. Since the site is represented by a single period of occupation, it can be assumed that the faunal assemblage is the result of highly mobile hunter-gatherers moving frequently in order to obtain subsistence resources (Bettinger 1991, Binford 1977). From the age at time of death data for *Bos bison*, it can be inferred that Tree Frog was occupied during late summer to early fall.

Vanwert (2000) described lithic tools from the Tree Frog site as expedient and informal. While the presence of expedient tools does not support the notion of high mobility, I agree with Vanwert (2000) in that this can be explained by the presence of metal European artifacts. It has been suggested that, "we can conclude that the metal artifacts we actually find in archaeological sites probably under-represent the actual importance of early trade items in the native technological systems...metal items were probably highly valued and heavily used, recycled, and re-traded, and therefore not as common as stone tools in the archaeological record" (Ahler 1989). It is likely that the Tree Frog inhabitants were using a curated metal tool kit along with stone tools. High mobility is also supported by obsidian diversity.

Site Function

The areas excavated at Tree Frog are undoubtedly part of a butchering and processing activity area. As stated in chapter III, the faunal assemblage is dominated by low utility parts such as lower limb and head bones. In keeping with the notion that low utility parts are indicative of a butchering local (Binford 1978); and because fragmented burnt and green bone suggests marrow processing (Davis 1987), Tree Frog fits the proposed model.

This is not to say that Tree Frog as a whole is strictly a butchering and processing site. There may well be other activity areas within the overall site boundaries. It seems likely however, that the sole activity at Tree Frog was butchering and processing. Since highly mobile groups map onto resources in the environments (Gamble 1991), it is likely that Tree Frog represents a settlement history in which butchering and processing took place near the actual kill site. I assume this because a high percentage of the butchered animals are adult. White (1953) suggests that the size of an animal will affect butchery in that a large animal, being difficult to move, would need to be butchered and processes where it is killed.

Since there is evidence that the group occupying Tree Frog had access to horses, it is possible that high utility portions of the butchered animals are not located at the site. Horses used for transporting meat would have allowed from meat to be carried great distances from the actual kill site.

Seasonality

Based on bison herd diversity (inclusive of adults, subadults, and juveniles), it can be assumed that the occupation at Tree Frog happened sometime between late summer to early fall. The age ranges for the specimens recovered from Tree Frog indicate a nursery herd (Davis 1987). According to Liljeblad (1972:20) "in the late summer, when the emigrant

trains crossed the Snake River plains, most of the Indians were not at home. This was the time of the year when mounted Shoshoni bands were on their way to the buffalo country in Montana." It should be noted that the kills probably occurred prior to the summer rut, since no neonate elements were recovered.

Frison (1974) suggests that bison hunting in the fall was advantageous in many respects, 1) body fat is high, 2) weather is optimal for drying meat, and 3) difficult males have left the herd for the winter. Frison's assumptions may be correct, however as stated before, the lack of neonate elements suggests that the Tree Frog kills occurred before the late summer rut.

Horse and Dog Remains Relating to Increased Mobility

As stated by Vanwert (2000), access to horses would have allowed for the variability in non-local lithic material located at Tree Frog. The presence of the horse would have also allowed for the transport of meat greater distances away from the actual kill site. According to Osborn (1985), the horse allowed for an intensification of hunter-gather activities. Horses, having more carrying capacity than the dog, would have allowed for larger quantities of goods to be carried with the group. "The introduction of the horse widened the range of activities and greatly increased success in hunting for groups having them (Osborn 1985, Forde 1934).

It is likely that the Tree Frog inhabitants had domesticated dogs. The role of dogs after the acquisition of the horse is unclear. However, Osborn (1985:565) suggests that dogs may have been used in buffalo hunting activities. If this is the case, the possible dog remains from the faunal assemblage may indicate the use of dogs by the Shoshone in order to hunt bison.

Mobility, a key to hunter-gatherers, is the means by which a population maps onto environmental resources in order to avoid shortage and conflict (Gamble 1991). The horse would have allowed for greater mobility and therefore easier access to food resources, hence avoiding conflict and shortage.

Dating the Site

As stated in the introductory chapter, radiocarbon dates place Tree Frog firmly in the Protohistoric time frame, AD 1590 to AD 1790. Within this 200-year period, it may be possible to suggest the earliest possible date for Tree Frog. The acquisition of the horse by the Shoshone is key in this determination. According to Steward (1938:201):

> there is some evidence that the Shoshone acquired the horse directly from the Spanish and were among the first tribes to have them. Thompson recounts a fight between the Blackfeet and the Shoshone in 1730, when the later (probably Wyoming groups) had horses, but the former had none.

However, "De Soto carried some of his horses across the Mississippi in 1541, about the same time Coronado reached the present bounds of Oklahoma from Santa Fe" (Wissler 1914:1-2). If southwestern groups acquired horses directly from Coronado and traded them to the Shoshone, it is possible that the Shoshone had horses as early as AD 1550 to AD 1600. This would make it possible for the Tree Frog site to fall earlier than later within the range of radiocarbon dates. Particularly if, as suggested in Chapter I, Tree Frog is located on a trade route linking northern tribes to the Shoshone Rendezvous in southwestern Wyoming (Wood 1980). The traditional date for the Shoshonean acquisition of the horse may be too late. With limited information as to when the Shoshone actually acquired the horse, it is difficult to narrow the date too much.

Changes in Shoshonean Subsistence

As stated, the horse allowed for vast changes for all aboriginal groups upon its acquisition. This change for the Shoshone allowed for the development of new subsistence strategies, and territorial expansion (Steward 1938, Arkush 1990). Tree Frog is important in that it may well represent this transition from traditional Shoshonean subsistence strategy to Plains-like bison hunting. As previously stated, not all Shoshone bands developed Plains traditions; however, those that did represent cultural change or evolution. Tree Frog is likely a site that, with further research, could yield significant information regarding this transition from Great Basin Shoshone to Great Plains Shoshone.

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F#	ELEMENT	TAXON	SIDE	PORTION P=Prox D=Dist C=Comp F=Frags	AGE N=Neonate J=Juvenille S=Subadult A=Adult	QUANT	WEIGHT IN GRAMS	BURN B=Burn C=Char Ca=Calc	GNAW C=Carn R=Rod	EX AREA
4	Phalanx	Antilocarpa americanus	L	P	A	1	1.2			N
7	Vertebra	Bos bison		F	A	1	35			N
7	Phalanx	Bos bison	L	P	A	1	17			N
22	Rib	Bos bison		F	A	2	14.6			N
22	Ulna	Bos bison	L	F	A	1	32			N
42	Vertebra	Bos bison		F	A	1	60.5			N
42	Tooth	Bos bison		F	A	2	1.2			N
43	Tooth	Bos bison	R	C	A	1	38			N
7	Radius	Cervus elaphus	R	P	A	1	127			N
7	Ulna	Cervus elaphus	R	F	A	1	20.1			N
16	Mandible	Cervus elaphus	R	F	A	1	98.1			N
42	Antler	Cervus elaphus		F	A	1	16.9			N
42	Phalanx	Cervus elaphus	L	P	A	1	6.4			N
42	Phalanx	Cervus elaphus	L	D	A	1	5.1			N
42	Rib	Cervus elaphus	R	F	A	1	10.2			N
43	Humerus	Cervus elaphus	L	P	A	1	68.6			N
48	Patella	Cervus elaphus	L	C	A	1	93.5		R	N
49	Metatarsus	Cervus elaphus	R	D	A	2	137.5			N
49	Tibia	Cervus elaphus	R	F	A	1	51			N
49	Rib	Cervus elaphus	L	F	A	1	5.1			N
22	Radius	Large Artiodactyle	L	F	A	1	37.3			N
22	Femer	Large Artiodactyle		F	A	1	27.8		R, C	N
42	Tooth	Large Artiodactyle		F	A	3	1			N
43	Ulna	Large Artiodactyle	R	P	A	1	39			N
49	Humerus	Large Artiodactyle	R	F	A	4	79	C		N
7	Rib	Large Mammal		F	A	1	12.9			N
42	Rib	Large Mammal		F	A	2	5.5			N
42	Innomimate	Large Mammal	L	F	A	1	24.5			N
32	Rib	Medium Mammal	L	F	A	1	2.4			N
7	Metatarsal	Odocoileus virginianus	L	D	A	1	13.1			N
32	Skull	Oreamnos americanus		F	A	1	15.8			N
32	Tibia	Oreamnos americanus	L	F	A	1	19.6			N
4	Humerus	Spermophilus columbianus	R	C	A	1	0.5			N
4	Femer	Spermophilus columbianus	L	C	A	1	0.5			N
4	Innomimate	Spermophilus columbianus	R	C	A	1	0.3			N
33	Calcaneus	Antilocarpa americanus	L	C	A	1	19.2			N
12	Rib	Bos bison	R	F	A	1	78.4			N
12	Phalanx	Bos bison	R	F	A	1	34			N
12	Rib	Bos bison	R	F	A	1	56			N
11	Tibia	Cervus elaphus	R	P	A	1	216.7			N
12	Femer	Cervus elaphus	R	F	A	1	105.1			N
12	Radius	Large Mammal		F	A	1	38.8			N
12	Rib	Large Mammal		F	A	13	66.2			N
16	Vertebra	Large Mammal		F	J	1	6.6			N
32	Ulna	Bos bison	L	P	S	1	39.8			N
32	Tibia	Bos bison	L	D	S	1	41.2	C		N
42	Metatarsal	Bos bison	L	D	S	1	103.8			N
42	Sesamoid	Bos bison	L	D	S	1	1.8			N
7	Radius	Cervus elaphus	R	P	S	1	57.9			N
4	Humerus	Spermophilus columbianus	L	C	S	1	0.3			N
33	Malleolus	Bos bison	L	C	S	1	12.4			N

Appendix A—Faunal Remains (Northern Excavation Area)

F#	ELEMENT	TAXON	SIDE	PORTION P=Prox D=Dist C=Comp F=Frags	AGE N=Neonate J=Juvenille S=Subadult A=Adult	QUANT	WEIGHT IN GRAMS	BURN B=Bum C=Char Ca=Calc	GNAW C=Cam R=Rod	EX AREA
33	Humerus	Large Mammal	R	D	S	1	87.5			N
22	Tooth	Large Artiodactyle		F		4	1.4	B,C		N
22	Sesamoid	Medium Mammal		C		1	0.4			N
48	Humerus	Small Mammal	L	P		1	1.6			N
4	Green Bone	Unidentifiable		F		16	31.9		C	N
4	Burnt Bone	Unidentifiable		F		263	139.5	Ca, C, B		N
4	Burnt Bone	Unidentifiable		F		3	4.1			N
7	Green Bone	Unidentifiable		F		153	137.6			N
7	Burnt Bone	Unidentifiable		F		52	26.7	B, C		N
12	Burnt Bone	Unidentifiable		F		50	124.8	B		N
12	Green Bone	Unidentifiable		F		35	56.8			N
16	Burnt Bone	Unidentifiable		F		20	19	B, C		N
16	Green Bone	Unidentifiable		F		13	35.4	B		N
20	Burnt Bone	Unidentifiable		F		7	6.2	Ca, C, B		N
20	Green Bone	Unidentifiable		F		9	6.1			N
22	Green Bone	Unidentifiable		F		1	4.2			N
22	Green Bone	Unidentifiable		F		119	86.1			N
22	Burnt Bone	Unidentifiable		F		93	39.2	B,C		N
32	Green Bone	Unidentifiable		F		106	109			N
32	Burnt Bone	Unidentifiable		F		34	14.8	Ca, C, B		N
33	Burnt Bone	Unidentifiable		F		155	87.9	Ca, C, B		N
33	Green Bone	Unidentifiable		F		249	142.7			N
41	Burnt Bone	Unidentifiable		F		2	0.6			N
42	Burnt Bone	Unidentifiable		F		207	133.2	B, C		N
42	Green Bone	Unidentifiable		F		209	171			N
43	Burnt Bone	Unidentifiable		F		66	36.7	Ca, C, B		N
43	Green Bone	Unidentifiable		F		101	51.3			N
43	Tooth	Unidentifiable		F		2	0.6			N
48	Burnt Bone	Unidentifiable		F		42	23.7	B, C		N
48	Green Bone	Unidentifiable		F		34	23.4			N
49	Burnt Bone	Unidentifiable		F		133	77	B		N
49	Green Bone	Unidentifiable		F		70	103.7			N
49	Green Bone	Unidentifiable		F		57	26.4			N
49	Burnt Bone	Unidentifiable		F		29	18.2	Ca, C, B		N

Appendix A—Faunal Remains (Northern Excavation Area)

F#	ELEMENT	TAXON	SIDE	PORTION P=Prox D=Dist C=Comp F=Frags	AGE N=Neonate J=Juvenille S=Subadult A=Adult	QUANT	WEIGHT IN GRAMS	BURN B=Burn C=Char Ca=Calc	GNAW C=Carn R=Rod	EX AREA
39	Metacarpal	Antilocarpa americanus	L	F	A	1	6.9			S
5	Tooth	Bos bison		F	A	7	10.4			S
5	Humerus	Bos bison	L	F	A	1	33.4			S
26	Tibia	Bos bison	R	P	A	1	33.6			S
26	Rib	Bos bison	L	F	A	2	54.7			S
30	Rib	Bos bison	L	F	A	1	16.5			S
30	Femer	Bos bison	R	F	A	1	47.5		C	S
30	Tibia	Bos bison	R	F	A	1	145			S
30	Rib	Bos bison	R	F	A	7	49.7			S
36	Phalanx	Bos bison	R	C	A	1	18.4			S
46	Femer	Bos bison	L	F	A	1	42.2	C		S
46	Vertebra	Bos bison		F	A	2	22.4			S
46	Mandible/Tooth	Bos bison	R	F	A	3	40.3			S
46	Rib	Bos bison	L	F	A	4	48.6			S
5	Phalanx	Canis sp	R	C	A	1	1.5			S
26	Tooth	Canis sp	L	C	A	1	0.4			S
5	Rib	Cervus elaphus	L	F	A	1	10.9			S
5	Rib	Cervus elaphus	L	F	A	1	8.8		C	S
5	Rib	Cervus elaphus	L	F	A	4	9.6			S
26	Radius	Cervus elaphus	L	P	A	1	26			S
35	Rib	Cervus elaphus		F	A	6	55.3			S
35	Mandible/Tooth	Cervus elaphus	R	F	A	43	61			S
45	Tooth	Cervus elaphus	L	C	A	1	0.8			S
46	Mandible/Tooth	Cervus elaphus	L	F	A	8	28.1			S
46	Rib	Cervus elaphus	R	F	A	5	15.3			S
46	Mandible	Cervus elaphus	R	F	A	1	11.5			S
46	Tooth	Cervus elaphus	R	C	A	1	2.1			S
39	Tooth	Equus caballus	R	C	A	1	37.5			S
30	Phalanx	Large Artiodactyle		F	A	1	4.5		C	S
46	Antler	Large Artiodactyle		F	A	1	4.3			S
46	Femer	Large Artiodactyle	L	F	A	1	11			S
5	Rib	Large Mammal		F	A	9	70.6		R, C	S
26	Rib	Large Mammal		F	A	17	80			S
26	Femer	Large Mammal	L	D	A	1	25.6			S
36	Vertebra	Large Mammal		F	A	1	10.1	B		S
39	Femer	Large Mammal		F	A	1	20			S
26	Tooth	Marmota flaviventris	L	C	A	1	0.09	C		S
46	Antler	Unidentifiable		F	A	8	29.5			S
46	Antler	Unidentifiable		F	A	2	23.8			S
36	Phalanx	Aves sp	R	C	A	1	0.7			S
40	Rib	Large Mammal		F	A	1	12.3			S
45	Rib	Large Mammal		F	A	1	5.6			S
5	Vertebra	Bos bison		F	J	1	9			S
5	Metatarsal	Bos bison	R	D	J	1	33.8			S
5	Vertebra	Bos bison		F	J	1	14.5			S
5	Vertebra	Vulpes vulpes		F	J	1	0.3			S
40	Metacarpal	Bos bison	R	D	J	1	26.6		C	S
26	Femer	Medium Mammal	L	P	J	1	3.5	B		S
39	Phalanx	Bos bison	R	C	S	1	17.6			S
39	Humerus	Bos bison	R	F	S	1	152.9			S
46	Mandible	Bos bison	L	F	S	1	10.3			S

Appendix B—Faunal Remains (Southern Excavation Area)

F#	ELEMENT	TAXON	SIDE	PORTION P=Prox D=Dist C=Comp F=Frags	AGE N=Neonate J=Juvenille S=Subadult A=Adult	QUANT	WEIGHT IN GRAMS	BURN B=Burn C=Char Ca=Calc	GNAW C=Carn R=Rod	EX AREA
46	Tooth	Cervus elaphus	L	C	S	1	1.5			S
25	L. Intermediate C	Bos bison	L	C	S	1	11.5			S
35	Mandible	Bos bison	R	F		5	35.1			S
35	Tooth	Bos bison		F		2	0.7			S
25	Tooth	Equus caballus		F		1	0.1			S
26	Tooth	Large Artiodactyle		F		1	0.7			S
36	Rib	Large Mammal		F		3	11.5			S
37	Rib	Large Mammal		F		3	22.7			S
39	Rib	Large Mammal		F		2	29.3		R	S
40	Green Bone	Large Mammal		P		1	18.5			S
39	Rib	Meduim Mammal		F		2	5.2			S
5	Green Bone	Unidentifiable		F		634	578.7			S
5	Green Bone	Unidentifiable		F		4	23.1			S
25	Burnt Bone	Unidentifiable		F		17	13.3	Ca, C, B		S
25	Green Bone	Unidentifiable		F		9	7.1		R	S
26	Green Bone	Unidentifiable		F		74	47.7			S
26	Burnt Bone	Unidentifiable		F		81	57.7	Ca, C, B		S
26	Burnt Bone	Unidentifiable		F		12	6.1	B,C,Ca		S
26	Green Bone	Unidentifiable		F		7	1.9			S
29	Burnt Bone	Unidentifiable		F		6	2.1			S
29	Green Bone	Unidentifiable		F		9	3.9			S
30	Burnt Bone	Unidentifiable		F		72	42.1	B, C		S
30	Green Bone	Unidentifiable		F		64	35.3			S
30	Burnt Bone	Unidentifiable		F		9	4.2			S
30	Green Bone	Unidentifiable		F		10	2.5			S
35	Green Bone	Unidentifiable		F		1	6.7			S
35	Green Bone	Unidentifiable		F		85	52.2			S
35	Burnt Bone	Unidentifiable		F		38	22	B		S
36	Green Bone	Unidentifiable		F		83	45.6			S
36	Burnt Bone	Unidentifiable		F		70	35.4	B, C		S
37	Burnt Bone	Unidentifiable		F		12	6.5	B, C		S
37	Green Bone	Unidentifiable		F		15	4			S
39	Green Bone	Unidentifiable		F		135	96.6			S
39	Burnt Bone	Unidentifiable		F		115	59.3	B, C		S
39	Green Bone	Unidentifiable		F		15	6.9			S
39	Burnt Bone	Unidentifiable		F		3	1.2	B		S
40	Burnt Bone	Unidentifiable		F		17	9.1	B, C		S
40	Green Bone	Unidentifiable		F		11	5.5			S
40	Burnt Bone	Unidentifiable		F		29	15.1	Ca, C, B		S
40	Green Bone	Unidentifiable		F		8	28.3			S
45	Burnt Bone	Unidentifiable		F		10	5.8	B, C		S
45	Green Bone	Unidentifiable		F		21	20.3			S
46	Green Bone	Unidentifiable		F		87	66.2			S
46	Burnt Bone	Unidentifiable		F		181	158.4	Ca, C, B		S
46	Green Bone	Unidentifiable		F		2	8.3			S
46	Green Bone	Unidentifiable		F		6	17.5			S
46	Green Bone	Unidentifiable		F		3	4.8			S
46	Green Bone	Unidentifiable		F		4	16.6			S
46	Burnt Bone	Unidentifiable		F		7	10.6	B		S

Appendix B—Faunal Remains (Southern Excavation Area).